UNITED STATES DEPARTMENT OF COMMERCE
Pat nt and Trademark Offic
Addr ss: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/285,773	04/05/99	MERCALDI G	M4065.165/P1

IM22/1023

THOMAS J D'AMICO
DICKSTEIN SHAPIRO MORIN & OSHINSKY
2101 L STREET NW
WASHINGTON DC 20037-1526

EXAMINER	
UMEZ ERONINI,L	
ART UNIT	**PAPER NUMBER**
1765	9

DATE MAILED: 10/23/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/285,773	Applicant(s) Mercaldi et al.
	Examiner Lynette T. Umez-Eronini	Group Art Unit 1765

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *1* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-7, 9-11, 13-18, 22-41, and 82-86* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-7, 9-11, 13-18, 22-41, and 82-86* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *8*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed August 10, 2000 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because an English translation of Reference **C**, Document No. **272,371 B** is not provided. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 25, line 2, the phrase, "selected from the group consisting of ethylene, propylene glycol" is indefinite for improper use of Markush language.

It is suggested the phrase be corrected to read, "selected from the group consisting of ethylene and propylene glycol."

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 6, 9, 10, 22-25, 27, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitsubishi Electric Corp. (JP 0048816).

Mitsubishi Electric Corp. teaches an etching liquid that includes an organic substance such as ethylene glycol or glycerol in addition to 1 part of 50% HF solution and 40 parts on nitric acid by volume (abstract) which reads on a composition for selectively etching a doped substance, said composition consisting essentially of: an alcohol and at least two inorganic acids, wherein a major component of said composition is non-aqueous. It is noted that no patentable weight is given to the phrase, "for selectively etching a doped substance" because the functional language shows intended

use. Likewise the intended use of composition is not patentably significant. *In re Albertson* 141 USPQ 730 (CCPA 1964); *In re Heck* 114 USPQ 161 (CCPA 1957).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 5,11 and 26, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claims 1 and 22 respectively.

Unlike the claimed invention, Mitsubishi Electric Corp. does not expressly teach the composition, wherein said alcohol is propylene glycol as recited in claims 5, 11, 26 and 32.

In the art of making an etching composition, conventional non aqueous solvents include organic liquids such as alcohols, ketones and esters. Commonly used alcohols include ethylene glycol and propylene glycol.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ a conventional solvent such as propylene glycol for the purpose of producing an effective etchant.

8. Claim 7; and 28, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 1 and 22 respectively.

Unlike the claimed invention, Mitsubishi Electric Corp. does not expressly teach the composition, wherein a C_2-C_6 alcohol is selected from the group consisting of ethanol, propanol, isopropanol, isobutanal, and n-butanol as recited in claims 7 and 28 and the alcohol is isopropanol as recited in claim 29.

In the art of making an etching composition, conventional non aqueous solvents include organic liquids such as alcohols, ketones and esters. Commonly used C_2-C_6 alcohols include ethanol, propanol, isopropanol, isobutanol, and n-butanol.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ a conventional C_2-C_6 alcohol such as ethanol, propanol, isopropanol, isobutanol, and n-butanol for the purpose of producing an effective etchant.

9. Claims 13-18 and 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816) as applied to claim 1 and 22 respectively.

Unlike the claimed invention, Mitsubishi Electric Corp. does not explicitly recite the ratios of alcohol to acid components in claims 13-18 and 33-38.

In a method of etching semiconductors, the rate of removing unwanted materials is dependent upon process parameters such as the etchant flow rate, pressure, temperature and concentration. Varying one or more of the process parameters result in variations in the etch rate of the material to be removed.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to adjust the concentration of the etchant composition by optimizing the same by conducting routine experimentation for the purpose of producing an effective etchant. Changes in concentrations or other process conditions of an old process do not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. *In re Aller et al.*, 105 USPQ 233.

10. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816).

Mitsubishi Electric Corp. teaches an etching liquid that includes an organic substance such as ethylene glycol or glycerol in addition to 1 part of 50% HF solution and 40 parts on nitric acid by volume (abstract). No patentable weight is given to the phrase, "for selectively etching doped polysilicon from a silicon substrate with high selectivity to undoped polysilicon." because the functional language shows intended use. Likewise the intended use of composition is not patentably significant. *In re Albertson* 141 USPQ 730 (CCPA 1964); *In re Heck* 114 USPQ 161 (CCPA 1957).

Mitsubishi Electric Corp. does not expressly teach a non-aqueous composition comprising propylene glycol and the ratio of the etching composition as claimed in the present invention.

In the art of making an etching composition, conventional non aqueous solvents include organic liquids such as alcohols, ketones and esters. Conventional solvents include ethylene glycol and propylene glycol.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ a conventional non aqueous composition such as propylene glycol for the purpose of producing an effective etchant.

In method of etching semiconductors, the etch rate of removing unwanted material is dependent upon process parameters such as the etchant flow rate, pressure, temperature and concentration. Varying one or more of the process parameters result in variations in the etch rate of the material to be removed.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to adjust the concentration of the etchant composition by optimizing the same by conducting routine experimentation for the purpose of producing an effective etchant. Changes in concentrations or other process conditions of an old process do not impart patentability unless the recited ranges are critical, i.e., they produce a new and unexpected result. *In re Aller et al.*, 105 USPQ 233.

11. Claims 82 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Electric Corp. (JP 0048816).

Mitsubishi Electric Corp. teaches an etching liquid that includes an organic substance such as ethylene glycol or glycerol in addition to 1 part of 50% HF solution

and 40 parts on nitric acid by volume (abstract). No patentable weight is given to the phrase, "A composition for selectively etching a doped substance," because the functional language shows intended use. Likewise the intended use of composition is not patentably significant. *In re Albertson* 141 USPQ 730 (CCPA 1964); *In re Heck* 114 USPQ 161 (CCPA 1957).

Mitsubishi Electric Corp. does not explicitly teach a composition for selectively etching a doped substance, said composition consisting essentially of isopropanol and propylene as recited in claims 82 and 83 respectively.

In the art of making an etching composition, conventional non aqueous solvents include organic liquids such as alcohols, ketones and esters. Conventional solvents include polyhydric alcohols such as ethylene and propylene glycol and monohydric alcohols such as ethanol, propanol and isopropanol.

It would have been obvious to one having ordinary skill in the art at the time of the claimed invention to employ a conventional alcohol such as propylene glycol and isopropanol for the purpose of producing an effective etchant.

Claim Rejections - 35 USC § 102

12. Claims 84-86 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitsubishi Electric Corp. (JP 0048816).

Mitsubishi Electric Corp. teaches an etching liquid that includes an organic substance such as ethylene glycol or glycerol in addition to 1 part of 50% HF solution and 40 parts on nitric acid by volume (abstract) which reads on a composition consisting essentially of: and alcohol and at least two inorganic acids, wherein a major component of said composition in non-aqueous.

No patentable weight is given to the phrase, "A composition for selectively etching doped material of amorphous silicon, pseudopolycrystalline or polycrystalline silicon; doped germanium; and gallium arsenide as recited in claims 84, 85, and 86 respectively. Likewise the intended use of composition is not patentably significant. *In re Albertson* 141 USPQ 730 (CCPA 1964); *In re Heck* 114 USPQ 161 (CCPA 1957).

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee

pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is (703) 306-9074.

BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

ltue

October 19, 2000